

### Amendments to the Specification

Please amend the specification by replacing the original text found in page 10, lines 25-31 with the amended text that follows it (eliminated text has a strikethrough; added text is underlined):

#### *Original Text*

"Referring to Fig. 1, it is observed that conventional skin regions have relatively low number of blood capillary loops per  $\text{mm}^2$  ~~110~~ of the skin surface. For example, the nose has 100 blood capillary loops per  $\text{mm}^2$ , while the ear has 38 blood capillary loops per  $\text{mm}^2$ . Alternatively, there are approximately 149 to 158 blood capillary loops per  $\text{mm}^2$ , within the chin region ~~120~~ of a human patient."

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"Referring to Fig. 1, it is observed that conventional skin regions have relatively low number of blood capillary loops per  $\text{mm}^2$  ~~110~~ of the skin surface. For example, the nose has 100 blood capillary loops per  $\text{mm}^2$ , while the ear has 38 blood capillary loops per  $\text{mm}^2$ . Alternatively, there are approximately 149 to 158 blood capillary loops per  $\text{mm}^2$ , within the chin region ~~120~~ of a human patient."

Please amend the specification by replacing the original text found in page 15, lines 12-18 with the amended text that follows it (eliminated text has a strikethrough; added text is underlined):

#### *Original Text*

"Referring to Fig. 8, another configuration of a head apparatus for sports, training, firefighting, construction, policing, security, or military applications is shown. A chin strap 810 is integrally formed with a cup 805 that accommodates sensor electronics. The chin strap 810 may be attached to a

structure 815 that provides support to the neck pad 820 and the strap 825 connected to a suspension system 835 and headband 830."

*Amended Text*

"Referring to Fig. 8, another configuration of a head apparatus 800 for sports, training, firefighting, construction, policing, security, or military applications is shown. A chin strap 810 is integrally formed with a cup 805 that accommodates sensor electronics. The chin strap 810 may be attached to a structure 815 that provides support to the neck pad 820 and the strap 825 connected to a suspension system 835 and headband 830."

Please amend the specification by replacing the original text found in page 17, lines 8-21 with the amended text that follows it (eliminated text has a strikethrough; added text is underlined):

*Original Text*

"For a sensor apparatus that is embedded in a head apparatus and chin strap, it is preferred that the head apparatus be securely fastened to the skull of the wearer. An example for how to do the same is demonstrated with the help of a chin strap employing a D-ring system, shown in Figure 12. If the strap 1205 is not substantially firmly pressed against the chin of the subject, the strap should be further secured through the D-rings 1206. To securely fasten the D-ring retention system 1206, ends of the chin strap should be threaded through the D-rings, as shown in Figure 12, and pulled tight. Preferably, the chin strap end hook is clipped 1202 on to the D-ring. This secures the loose end of the chin strap after securely tightening the strap and avoids having the end portion of the chin-strap remain loose."

*Amended Text*

"For a sensor apparatus that is embedded in a head apparatus

and chin strap, it is preferred that the head apparatus be securely fastened to the skull of the wearer. An example for how to do the same is demonstrated with the help of a chin strap employing a D-ring system, shown in Figure 12. If the strap 1205 is not substantially firmly pressed against the chin of the subject, the strap should be further secured through the D-rings 1206. To securely fasten the D-ring retention system 1206, ends of the chin strap should be threaded through the D-rings, as shown in 1201 and 1204 of Figure 12, and pulled tight.

Preferably, the chin strap end hook is clipped 1202 on to the D-ring. This secures the loose end of the chin strap after securely tightening the strap and avoids having the end portion of the chin-strap remain loose."

Please amend the specification by replacing the original text found in page 14, lines 25-29 with the amended text, designed to clarify the trademark status of Velcro, that follows it (eliminated text has a strikethrough; added text is underlined):

*Original Text*

"The strap 710, 705 components are securely attached through an attachment mechanism 718, such as Velcro, a button snap, or other means and physically integrated with a head apparatus through a triangular ring 715."

*Amended Text*

"The strap 710, 705 components are securely attached through an attachment mechanism 718, such as Velcro®, a button snap, or other means and physically integrated with a head apparatus through a triangular ring 715."

Please amend the specification by replacing the original abstract found in page 32, lines 3-20 with the amended text that

follows it (eliminated text has a strikethrough; added text is underlined):

*Original Abstract*

"The present invention is directed toward a system for monitoring a region of a person to determine a plurality of physiological characteristics, including blood oxygenation levels, blood gases, respiratory rates, and pulse rates. The monitored region includes at least a portion of a dermal layer extending over anywhere on the chin, including at least one of the subject's mandible, symphysis, mental protuberance, or incisive fossa. The system comprises a sensor having at least one light emitting source and at least one detector. Preferably, the sensor is positioned on the region being monitored and is secured to the region being monitored by a securing means. Optionally, the securing means comprises a strap that is adjustable and in physical communication with the housing. In one embodiment, the strap is attached to an apparatus and the apparatus is capable of being secured to a head of the subject. The apparatus can be attached to a helmet and used for at least one of a military, sporting, construction, security, policing, or firefighting application."

*Amended Abstract*

"The present invention is directed toward a system for monitoring a region of a person to determine a plurality of physiological characteristics, including blood oxygenation levels, blood gases, respiratory rates, and pulse rates. The monitored region includes at least a portion of a dermal layer extending over anywhere on the chin, including at least one of the subject's mandible, symphysis, mental protuberance, or incisive fossa. The system ~~comprises~~ has a sensor having at least one light emitting source and at least one detector. Preferably, the sensor is positioned on the chin region being

monitored and is at least partially suction-secured to the chin  
~~region being monitored by a securing means. Optionally, the~~  
~~securing means comprises a strap that is adjustable and in~~  
~~physical communication with the housing. In one embodiment, the~~  
~~strap is attached to an apparatus and the apparatus is capable of~~  
~~being secured to a head of the subject. The apparatus can be~~  
~~attached to a helmet and used for at least one of a military,~~  
~~sporting, construction, security, policing, or firefighting~~  
~~application."~~